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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/840,165	05/06/2004	Gunther Dreezen	3095.EEM	7511

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EXAMINER

THOMAS, ERIC W

ART UNIT PAPER NUMBER

2831

DATE MAILED: 04/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/840,165

Applicant(s)

DREEZEN ET AL.

Examiner

Eric W. Thomas

Art Unit

2831

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2 and 4-29 is/are pending in the application.
- 4a) Of the above claim(s) 22-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **INTRODUCTION**

The examiner acknowledges, as recommended in the MPEP, the applicant's submission of the amendment dated 3/2/05. At this point, claims 1-2, 4 have been amended; claim 3 has been cancelled; and claims 22-29 are withdrawn. Thus claims 1-2, 4-21 are pending in the instant application.

### ***Election/Restrictions***

1. Applicant's election of invention I in the reply filed on 3/2/05 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 21 is confusing. Claim 21 requires the termination coating to be formed on a metal-glass termination. This contradicts the limitation "for directly coating a surface mount component" of claim 1.

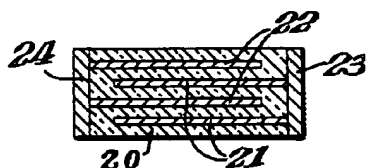
***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-2, 4-6, 12-13, 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Burn (US 4,101,952).



Burn discloses in fig. 2, a termination coating (23 – see col. 5 lines 44-50, & then col. 4 lines 25-30) for directly coating a surface mount component comprising a thermoplastic resin (ethyl cellulose) and an electrically conductive filler wherein the conductive filler is copper powder.

Regarding claim 2, Burn discloses the surface mount component is a multilayer ceramic capacitor having one or more internal electrodes (21, 22) and wherein the termination coating is directly in contact with the internal electrodes.

Regarding claim 4, Burn discloses the electrically conductive filler is copper powder.

Regarding claim 5, Burn discloses the multilayer ceramic capacitor is a base metal capacitor (see materials).

Regarding claim 6, Burn discloses the resin is an ester (ethyl cellulose).

Regarding claim 12, Burn discloses the coating is about 62.64 percent filler (see example 1).

Regarding claim 13, Burn discloses the coating is about 62.64 percent filler (see example 1).

Regarding claim 18, Burn discloses the coating is formed on a base metal multilayer ceramic capacitor.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1, 2, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishizawa (JP 03-27003) in view of Prakash et al. (US 4,517,155).

Regarding claim 1, Nishizawa et al. disclose in the abstract a termination coating directly coating a surface mount ceramic capacitor comprising a thermosetting resin and conductive filler.

Nishizawa discloses the claimed invention except for the metallic filler is selected from the group consisting of copper flake, copper powder, silver plated copper, cobalt, indium, or mixtures thereof.

Nishizawa disclose that the filler is not limited to any particular powder (as noted by applicant). Nishizawa discloses the filler can be a precious metal powder such as silver or palladium or a metal powder of nickel or the like (base metal).

Prakash et al. teach in col. 1 lines 30-50, that it is common in the multilayer ceramic capacitor art to use copper powder in the external electrodes that directly connects to the capacitor.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a copper powder (the well-known material) in the terminations of Nishizawa, since copper is a well-known base metal having high electrical conductivity which is relatively less expensive than precious metals (silver, palladium) and copper exhibits higher electrical conductivity than nickel (nickel has a higher electrical resistance).

Regarding claim 2, Nishizawa et al. disclose the surface mount component is a multilayer ceramic capacitor.

Regarding claim 19 and 20, Nishizawa et al. disclose the coating maybe cured at a temperature of less than 230°C (abstract).

9. Claims 1-2, 4, 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (US 2004/0176238) in view of Sakagami et al. (JP – 2002-332502).

Ito et al. disclose in fig. 1, a base metal multilayer ceramic capacitor (MLCC - see paragraph 93) having external electrode terminations comprising a copper paste directly connected to the MLCC. Ito et al. disclose the claimed invention except for the termination coating comprising a thermoplastic or thermosetting resin and electrically conductive filler, wherein the conductive filler is selected from the group consisting of copper flake, copper powder, silver-plated copper, cobalt, indium, or mixtures thereof.

Sakagami et al. teach an improved copper paste that is used in electrodes for ceramic capacitors/contact surfaces, wherein the copper paste comprises a thermoplastic resin .

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the external electrode terminal of Ito et al. using the improved copper paste material used as electrodes for ceramic capacitor/contact surfaces of Sakagami et al., since such a modification would provide the capacitor of Sakagami et al. with an external electrode with improved quality and reduced production control cost.

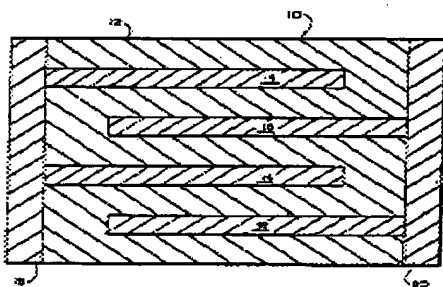
Regarding claim 2, Ito et al. disclose that the paste is used in a MLCC wherein the capacitor has more than one internal electrode (4), and wherein the external electrode terminal directly contacts the internal electrodes.

Regarding claim 4, Sakagami et al. disclose the electrically conductive filler is a copper powder (paragraph 12).

Regarding claim 7, Sakagami et al. disclose the copper powder is coated with an organic material (paragraphs 15-18).

Regarding claim 8, Sakagami et al. disclose the copper powder is coated with a fatty acid (paragraph 12).

10. Claims 1-2, 4, 9-15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over McSweeney et al. (US 4,499,521) in view of Su et al. (US 4,999,136).



McSweeney et al. disclose a multilayer ceramic capacitor having external electrode terminations directly connected to the capacitor. McSweeney et al. disclose the claimed invention except for the termination coating comprising a thermoplastic or thermosetting resin and electrically conductive filler, wherein the conductive filler is



Art Unit: 2831

selected from the group consisting of copper flake, copper powder, silver-plated copper, cobalt, indium, or mixtures thereof.

Su et al. teach the use of a material suitable for use as termination coatings, wherein the material comprising a thermosetting resin (col. 4 lines 40-65) and copper conductive filler (col. 7 line 3).

Regarding claim 2, McSweeney et al. disclose the capacitor has more than one internal electrode (14, 16), and wherein the external electrode terminal directly contacts the internal electrodes.

Regarding claim 4, Su et al. teach that the electrically conductive filler is copper powder (col. 7 lines 2-12).

Regarding claim 9, Su et al. teach that the termination has a catalyst (col. 4 lines 55-65) or hardener (col. 4 lines 55-65).

Regarding claim 10, Su et al. teach that the coating comprises in the range of about 3 to about 25 weight percent of the resin (col. 4, lines 15-25, 40-55; col. 7 lines 19-25).

Regarding claim 11, Su et al. teach that the coating comprises in the range of about 5 to about 15 weight percent of the resin (col. 4, lines 15-25, 40-55; col. 7 lines 19-25).

Regarding claim 12, Su et al. teach that the coating comprises in the range of about 30 to 90 weight percent of the conductive filler (see col. 7 lines 19-25).

Regarding claim 13, Su et al. teach that the coating comprises in the range of about 40 to 80 weight percent of the conductive filler (see col. 7 lines 19-25).

Regarding claim 14, Su et al. teach that the coating comprises a hardener of about 0.01 to about 1 weight percent (col. 4 lines 55-65)

Regarding claim 15, Su et al. teach that the coating comprises a hardener of about 1 weight percent (col. 4 lines 55-65)

Regarding claim 17, Su et al. teach that the coating contains a catalyst of about 0.01 to about 1 weight percent (col. 4 lines 55-65)

11. Claims 1-2, 4-6, 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (US 2004/0176238) in view of JP 2003-187638 ('638).

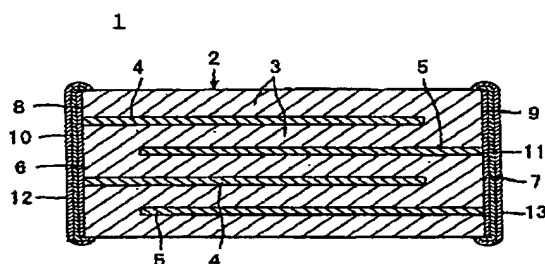


FIG. 1

Ito et al. disclose in fig. 1, a base metal multilayer ceramic capacitor (MLCC - see paragraph 93) having external electrode terminations (8, 9) comprising a copper paste directly connected to the MLCC (\*Applicant should note paragraph 42).

Ito et al. disclose the claimed invention except for the termination coating comprising a thermoplastic or thermosetting resin and electrically conductive filler, wherein the conductive filler is selected from the group consisting of copper flake, copper powder, silver-plated copper, cobalt, indium, or mixtures thereof.

'638 teaches an improved copper paste that is used in electrodes for ceramic capacitors/contact surfaces, wherein the copper paste comprises a thermoplastic resin and a copper filler (paragraph 72).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the termination coating of Ito et al. using the conductive copper paste of '638, since such a modification would provide a paste with improved fluid characteristics.

Regarding claim 2, Ito et al. disclose the surface mount component is a multilayer ceramic capacitor having one or more internal electrodes (4, 5) and wherein the termination coating is directly in contact with at least one of the one or more internal electrodes.

Regarding claim 4, '638 teaches that the electrically conductive filler is copper powder (see paragraph 72).

Regarding claim 5, Ito et al. (as modified by '638) discloses the multilayer ceramic capacitor is a base metal multilayer capacitor.

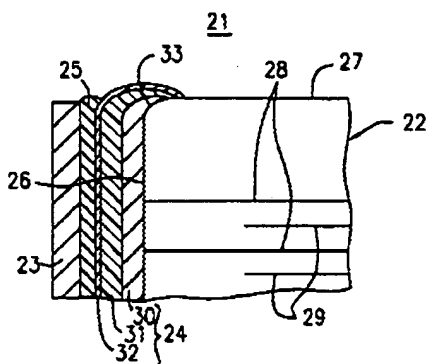
Regarding claim 6, '638 teaches that the resin is a ester (see paragraph 22).

Regarding claim 9, '638 teaches that the coating comprises a thixotropic agent (see paragraph 22).

Regarding claim 16, '638 teaches that the coating comprises 0.5 to about 5 weight percent of the thixotropic agent.

Art Unit: 2831

12. Claim 21, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa et al. (US 6,388,864) in view of Hayakawa et al. (US 2004/0144962) and Prakash et al. (US 4,517,155).



**FIG. 3**

Regarding claim 21, Nakagawa et al. disclose a capacitor comprising a termination formed from a conductive paste, a termination coating comprising a thermosetting resin (col. 4 lines 30-35) and conductive metal filler.

Nakagawa et al. disclose the claimed invention except for the termination is formed from a metal-glass material and the conductive metal filler is a copper material.

Hayakawa et al. teach the use of an improved conductive paste comprising a base metal and a glass frit.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the capacitor of Nakagawa et al. using the metal-glass termination of Hayakawa et al., since such a modification would provide the capacitor with a termination having a glass frit that is free of lead, cadmium, and bismuth.

Prakash et al. teach in col. 1 lines 30-50, that it is common in the multilayer ceramic capacitor art to use copper powder in the external electrodes that directly connects to the capacitor.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a copper powder (the well-known material) in the terminations of Hayakawa et al., since copper is a well-known base metal having high electrical conductivity which is relatively less expensive than precious metals (silver, palladium) and copper exhibits high electrical conductivity than nickel (nickel has a higher electrical resistance).

### ***Response to Arguments***

13. Applicant's arguments with respect to claims 1-2, 4-21 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

Art Unit: 2831

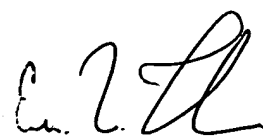
shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric W. Thomas whose telephone number is 571-272-1985. The examiner can normally be reached on Monday - Friday 5:30 AM - 2:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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 4/10/05  
**ERIC W. THOMAS**  
**PRIMARY EXAMINER**